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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,116	04/16/2004	Reed Glenn Wood JR.	10030530-1	9879

7590 05/16/2007
AGILENT TECHNOLOGIES, INC.
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Intellectual Property Administration
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EXAMINER

DSOUZA, JOSEPH FRANCIS A

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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05/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

5/1

Office Action Summary	Application No. 10/826,116	Applicant(s) WOOD, REED GLENN	
	Examiner Adolf DSouza	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 4, 6 - 10 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/16/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, in claims 3 and 4, the matched delays implemented as differential pairs or matched traces must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 2, 6, 7 - 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al. (US 6,002,279) in view of Mooney et. al (US 20030002607).

Regarding claim 1, Evans discloses a data recovery system (Abstract), comprising:

first and second data sampling elements (Fig. 7A, elements 706 and 708; column 4, line 66 – column 5, line 16);

a data interpolator to receive and output differential data signals (Fig. 7A, elements 702, 704; column 4, line 66 – column 5, line 16), said received differential data signal being sampled by the first data sampling element (Fig. 7A, element 706) , and said output differential data signal being sampled by the second data sampling element (Fig. 7A, element 708);

Evans does not disclose a clock interpolator and steer current.

In the same field of endeavor, however, Mooney discloses a clock interpolator to receive a first differential clock and output a second differential clock (Fig. 4, element 402; page 2, paragraph 30), said first differential clock operating the first data sampling element, and said second differential clock operating the second data sampling element;

and a mechanism to steer current between first and second nodes, the first node being coupled to bias an input differential pair of the clock interpolator and a delayed differential pair of the data interpolator, and the second node being coupled to bias an input differential pair of the data interpolator and a delayed differential pair of the clock interpolator (page 3, paragraph 32; Fig. 4, elements 420 and 450; wherein the steering current between the first and second nodes is interpreted as being done by current sources 420 and 450).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Mooney, in the system of Evans because this would provide different clock phases to be provided for sampling the data signal, as is well known in the art.

Regarding claim 2, Evans does not disclose the mechanism to steer current is configured to steer more current to the second node.

In the same field of endeavor, however, Mooney discloses the mechanism to steer current is configured to steer more current to the second node (paragraph 32; wherein

more current is steered towards the second node when the switching is done at the frequency of the input clock signal).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Mooney, in the system of Evans because this would provide different clock phases to be provided for sampling the data signal, as is well known in the art.

Regarding claim 6, Evans does not disclose the steering mechanism can provide different ratios of current.

In the same field of endeavor, however, Mooney discloses the current steering mechanism is programmable to steer different ratios of currents to the first and second nodes (paragraph 32; wherein the different ratios are provided by switching at the frequency of the input clock signal).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Mooney, in the system of Evans because this would provide different clock phases to be provided for sampling the data signal, as is well known in the art.

Claims 7, 9 and 10 are directed to method/steps of the same subject matter claimed in apparatus claims 1 - 2 and 6 respectively and therefore, are rejected as explained in the rejections of claims 1 - 2 and 6 above.

Regarding claim 8, Evans discloses providing the second clock and data signals to inputs of a chain of N more data interpolators (Fig. 7A; wherein the chain of data interpolators is interpreted as the elements 702, 704); and providing clock and data outputs of the chain of clock and data interpolators to N additional data sampling elements (Fig. 7A, elements 706, 708; column 4, line 66 – column 5, line 16).

Evans does not disclose a chain of clock interpolators.

In the same field of endeavor, however, Mooney discloses a chain of clock interpolators (Fig. 4, elements 402, 412; paragraph 32).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Mooney, in the system of Evans because this would provide different clock phases to be provided for sampling the data signal, as is well known in the art.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al. (US 6,002,279) in view of Mooney et. al (US 20030002607) and further in view of Lai et al. (US 5,012,494).

Regarding claim 3, Evans does not disclose the matched delays are implemented via differential pairs.

In the same field of endeavor, however, Lai discloses the matched delays between the input and delayed differential pairs are implemented via additional differential pairs (Fig. 14; column 9, lines 39 - 47).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Lai, in the system of Evans because this would provide an accurate matching of the delays using differential amplifiers, as is well known in the art.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Evans et al. (US 6,002,279) in view of Mooney et. al (US 20030002607) and further in view of Simon et al. (US 20010053187).

Regarding claim 4, Evans does not disclose that the delays are implemented via traces.

In the same field of endeavor, however, Simon discloses the matched delays between the input and delayed differential pairs are implemented via matched traces (paragraph 91).

Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the method, as taught by Simon, in the system of Evans because this would provide an accurate matching of the delays using cost effective traces, as is well known in the art.

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Allowable Subject Matter

6. Claims 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Prior Art Cited

7. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to clock and data recovery:

Pickering (US 6,466,098) discloses an Analogue-controlled phase interpolator.

Glenn et al. (US 20030123594) discloses Phase interpolator based clock recovering.

Drost et al. (US 20020121923) discloses clock interpolation through capacitive weighting.

Nakao (US 20040022339) discloses a Clock recovery circuit

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adolf DSouza whose telephone number is 571-272-

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1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Adolf DSouza
Examiner
Art Unit 2611


AD

David C. Payne
DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER